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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,249	06/11/2001	Stanley John Becker	608-297	7974

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EXAMINER

LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
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1764

12

DATE MAILED: 02/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/877,249

Applicant(s)

BECKER ET AL.

Examiner

Jennifer A. Leung

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 10-21 and 47-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-21 and 47-65 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Applicant's Amendment filed on November 14, 2002 has been received and carefully considered. The submitted changes to the Specification and Drawings are acceptable. Claims 8-9 and 22-46 have been cancelled. Claims 47-65 have been newly added. Claims 1-7, 10-21, and 47-65 remain active.

Claim Objections

2. Claims 5 and 51 are objected to because of the following informalities: With respect to claim 5, "insert" (line 4) should be changed to -- inert --. With respect to claim 51, -- is -- should be inserted before "provided" (line 4). Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-7, 10-21 and 47-65 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 1-7 and 10-21, the recitation of "A reactor... comprising" and "A reactor..." in the preamble is incomplete and non-functional, since the claims lack the recitation of an element for performing the specific function of the reactor, and the scope of the claims is generally directed towards the at least one inlet pipe. It is unclear as to whether the applicants are attempting to claim both a reactor and the at least one inlet pipe.

With respect to claims 3-4 and 49-50, the language of the claim is directed to a method limitation which renders the claim vague and indefinite as it is unclear as to what structural elements the applicants are attempting to recite, since "said inert fluid" and "said inert gas" are not considered elements of the apparatus but mere recitation of intended use.

With respect to claims 17 and 62, "the inlets" lacks proper positive antecedent basis.

With respect to claim 19, it is unclear as to the relationship of "a molecular oxygen-containing gas" to the "a molecular oxygen-containing gas" set forth in claim 1, line 2.

With respect to claims 21 and 65, "the reactor" lacks proper positive antecedent basis.

With respect to claim 47, it is unclear as to where the body of the claim begins since there is no indication of transition (i.e. "comprising"). Furthermore, the language of the claim is directed to a method limitation which renders the claim vague and indefinite as it is unclear as to what structural limitation the applicants are attempting to recite by, "wherein the inert fluid surrounding the inlet pipe is provided with a limited supply of inert fluid sufficient to replace minor leaks." (lines 4-6), since "the inert fluid" is not an element of the apparatus but merely recited intended use.

With respect to claim 51, it is unclear as to the relationship of "a supply of inert fluid" (line 4) to the "a limited supply of inert fluid" set forth in claim 47, line 5.

With respect to claim 61, it is unclear as to the relationship between the "more than one inlet pipe" to the "at least one inlet pipe" set forth in claim 47, line 2. The examiner suggests changing the claim to read, -- A reactor as claimed in claim 47, wherein said at least one inlet pipe comprises a plurality of inlet pipes. --.

With respect to claim 63, “low” is a relative term, which renders the claim vague and indefinite.

With respect to claim 64, it has been held that the recitation that an element is “adapted to” perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 10-13, 16-17, 19-21, 47-51, 54-57, 60-61, and 63-65 are rejected under 35 U.S.C. 102(b) as being anticipated by Schempp (U.S. 3,839,017).

With respect to claims 1 and 47, Schempp (FIG. 1, 2) discloses an apparatus comprising at least one inlet pipe 47 (tuyeres 17, 30-34) having an outlet and a surround means 48 for surrounding a substantial portion of said inlet pipe 47. Schempp further disclose the inlet pipe 47 is capable of carrying a molecular oxygen-containing gas (column 2, lines 31-33) and the means 48 for surrounding is capable of carrying a sealed inert fluid, such as water or air (column 4, lines 58-63). The recitation of “wherein the inert fluid surrounding the inlet pipe is provided with a limited supply of inert fluid sufficient to replace minor leaks” provides no further structural limitations, and therefore the apparatus of Schempp meets the claim.

With respect to claims 2 and 48, Schempp further disclose at least 85% of said inlet pipe 47 in said reactor is surrounded by said surround means 48 (see FIG. 2).

With respect to claims 3-4 and 49-50, Schempp further disclose said inert fluid may comprise an inert gas (column 4, lines 58-63; column 5, lines 10-11). Although Schempp is silent as to whether said inert gas may comprise nitrogen, carbon dioxide, helium, argon, neon, krypton and mixtures thereof, the apparatus of Schempp structurally meets the claims, since no further structural limitations are recited, the apparatus is fully capable of flowing such inert gases, and the inert fluid merely constitutes a recitation of intended use, which holds no patentable weight in apparatus claims.

With respect to claims 5 and 51, Schempp further discloses said surround means comprises an outer pipe 48 surrounding a substantial portion of the inlet pipe 47 for a molecular oxygen containing gas and is provided with a supply of inert fluid, namely water or air (FIG. 2; column 4, lines 59-63).

With respect to claims 10-11 and 54-55, Schempp further discloses means for suppressing ingress of reagents and/or products to the inlet pipe from the reactor, namely a means for providing molecular oxygen-containing gas in said inlet pipe at a higher pressure than the pressure in said reactor ("gas flowing through... at high pressure"; column 3, lines 50-57).

With respect to claims 12 and 56, Schempp further discloses a restriction (narrowed region of nozzle 46) to the outlet of said inlet pipe 47 (FIG. 2).

With respect to claims 13 and 57, Schempp further discloses said restriction (narrowed region of nozzle 46) comprises an orifice (FIG. 2).

With respect to claims 16 and 60, Schempp further discloses said restriction (narrowed region of nozzle 46) is located within the region surrounded by said means 48 for surrounding said inlet pipe 47 with inert fluid (FIG. 2).

With respect to claims 17 and 61, Schempp discloses more than one inlet pipe (tuyeres **17, 30-34**; FIG. 1).

With respect to claims 19 and 63, Schempp further disclose said molecular oxygen containing gas for said inlet pipes may be provided from a common end box (annular tubular header **40**; FIG. 1; column 4, lines 49-46) having an inventory of molecular oxygen containing gas.

With respect to claims 20 and 64, Schempp further discloses said inlet pipe is operably connected to a supply of molecular oxygen-containing gas provided through at least one flow restriction means which restricts flow of molecular oxygen-containing gas to the inlet pipe (i.e. swivel joint and pressure regulator for the source of oxygen; column 4, lines 40-46).

With respect to claims 21 and 65, Schempp further discloses the apparatus is suitable for use in a fluid bed reactor (i.e. reactor for fluidizing slag; column 58-65).

Instant claims 1-5, 10-13, 16-17, 19-21, 47-51, 54-57, 60-61, and 63-65 structurally read on the apparatus of Schempp.

5. Claims 1-5 and 47-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Iemori et al. (JP 09-159145).

With respect to claims 1 and 47, Iemori et al. (FIG. 1, 2; Abstract; sections [0001], [0005]-[0008]) disclose an apparatus comprising an inlet pipe **1** having an outlet and a surround means (jacket structure **2**) for surrounding a substantial portion of said inlet pipe **1**. Iemori et al. further disclose the inlet pipe **1** is capable of carrying a molecular oxygen-containing gas (industrial use oxygen) and the means for surrounding is capable of carrying a sealed inert fluid (water). The recitation of "wherein the inert fluid surrounding the inlet pipe is provided with a

Art Unit: 1764

limited supply of inert fluid sufficient to replace minor leaks” (claim 47) provides no further structural limitations, and therefore the apparatus of Iemori et al. meets the claim.

With respect to claims 2 and 48, Iemori et al. further disclose at least 85% of said inlet pipe is surrounded by said surround means (see FIG. 1).

With respect to claims 3-4 and 49-50, although Iemori et al. are silent as to whether said inert fluid may comprise an inert gas, such as nitrogen, carbon dioxide, helium, argon, neon, krypton and mixtures thereof, the apparatus of Iemori et al. structurally meets the claims, since no further structural limitations are recited, the apparatus is fully capable of flowing an inert gas, and the inert fluid merely constitutes a recitation of intended use, which holds no patentable weight in apparatus claims.

With respect to claims 5 and 51, Iemori et al. further disclose said surround means comprises an outer pipe 2 surrounding a substantial portion of the inlet pipe 1 for a molecular oxygen containing gas and is provided with a supply of inert fluid (FIG. 1, 2; Abstract).

Instant claims 1-5 and 47-51 structurally read on the apparatus of Iemori et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

Art Unit: 1764

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 6 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schempp (U.S. 3,839,017), as applied to claims 1, 5, 47 and 51 above, and further in view of Muller (DE 39 07 464).

Schempp is silent as to a means for allowing for differential expansion of said inlet pipe and said means for surrounding said inlet pipe with inert fluid. Invoking 35 U.S.C. 112, 6th paragraph, the specification (page 4, lines 5-7) states, "such differential expansion means may include bends in the inlet pipe and/or pigtails." Muller (Abstract; FIG.) teaches pipes **3**, fitted with nozzles **1**, wherein said pipes comprise bends. It would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to provide a means for allowing for differential expansion to the inlet pipes of the apparatus of Schempp because configuration of such bends in the inlet pipes helps prevent backflow of particles that attributes to nozzle blockage, as taught by Muller. Although the motivation for providing bends is not identical to the instant case, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Furthermore, allowance for differential expansion would be inherent of the structure of Muller.

Art Unit: 1764

7. Claims 7 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schempp (U.S. 3,839,017), as applied to claims 1 and 47 above, and further in view of Gensini et al. (U.S. 5,802,097).

Schempp is silent as to a means for detecting a change in pressure of said inert fluid surrounding said inlet pipe. Gensini et al. teaches a furnace having an oxygen inlet pipe **13**, with means for detecting a change in pressure of the inert fluid surrounding the inlet pipe (column 8, lines 18-40; FIG. 10). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a means for detecting a change in pressure to the apparatus of Schempp because the means enables the process conditions to be known and allows for regulation of the oxygen and inert gas flow, as taught by Gensini et al.

8. Claims 14-15 and 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schempp (U.S. 3,839,017).

With respect to claims 14 and 58, Schempp is silent as to said restriction (narrowed region of nozzle **46**; FIG. 2) being located at a distance from the outlet of said inlet pipe **47** such that a potential detonation is avoided. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select the location of the restriction to be as such, on the basis of suitability for the intended use and absent showing unexpected results, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Furthermore, shifting of the location of parts involves only ordinary skill in the art. *In re Japikse*, 181 F.2d 1019, 1023, 86 USPQ 70, 73 (CCPA 1950).

With respect to claims 15 and 59, Schempp is silent as to said restriction (narrowed region of nozzle **46**; FIG. 2) being located 4 to 5 pipe diameters from the end of the inlet pipe **47**. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select the location of the restriction to be as such, on the basis of suitability for the intended use and absent showing unexpected results, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Furthermore, shifting of the location of parts involves only ordinary skill in the art. *In re Japikse*, 181 F.2d 1019, 1023, 86 USPQ 70, 73 (CCPA 1950).

9. Claims 18 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schempp (U.S. 3,839,017), as applied to claims 1, 17, 47 and 61 above, and further in view of Wagner et al. (U.S. 5,801,265).

With respect to claims 18 and 62, Schempp further discloses said inlets are spaced apart at a given distance (FIG. 1; column 4, lines 18-24), but is silent as to whether said distance is significantly in excess of a potential flame length. Wagner et al. disclose reactor **36** comprising a plurality of oxygen gas inlets **60**, wherein the inlets **60'**, **60''** are positioned such that the distance **D** between inlets **60'**, **60''** is significantly in excess of a potential flame length (FIG. 3; column 4, lines 15-38). It would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to provide the inlets at a distance significantly in excess of the potential flame length to the apparatus of Schempp because the arrangement provides an improved system for introducing oxygen containing gas that avoids explosions, deflagration, or other anomalous process conditions, as taught by Wagner et al. (column 2, lines 13-18).

Art Unit: 1764

Response to Arguments

10. Applicant's arguments with respect to claims 1-7, 10-21 and 47-65 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is 703-305-4951. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jennifer A. Leung

February 9, 2003

JAL

Hien Tran

**HIEN TRAN
PRIMARY EXAMINER**